

**Oak Ridge National Laboratory (ORNL) Comments on the
Management of Hazardous Wastes in Research and/or Academic
Laboratories
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General Comments:

ORNL commends the U.S. Environmental Protection Agency (EPA) for soliciting feedback from research laboratories regarding generator management of hazardous wastes. The larger number of potential generators and the larger number of waste streams generated in small volume make the DOE National Laboratories even more unique than academic institutions or academic laboratories. Relief from some of the generator requirements for research institutions, not just academic institutions, would enable the institution's waste management system to be implemented more easily and at a lower overall cost, but still be protective of human health and the environment.

Background: ORNL is a multi-program science and technology laboratory managed for the U.S. Department of Energy (DOE) by UT-Battelle, LLC. Scientists and engineers at ORNL conduct basic and applied research and development to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science; increase the availability of clean, abundant energy; restore and protect the environment; and contribute to national security.

ORNL has implemented an environmental management system that includes offering direct assistance or expert technical support in waste characterization and management to the laboratories' waste generators in the laboratory setting. This program seems to be working well for ORNL, and generators welcome the technical assistance. Within this program, generators generally do not make the actual hazardous waste determinations, but do supply all the information that is necessary to support the hazardous waste determination process. The generator pays for any sampling and analysis required. Satellite accumulation areas (SAA) are managed by the generator and are generally located in a laboratory hood or a flammable materials cabinet. Quantities of hazardous waste are generally small volume waste streams and excess unneeded chemicals.

ORNL is both a large quantity generator and a permitted storage facility. ORNL generally has approximately 350 SAAs and up to 20 90DAAs at a given time supporting as many as 4000 staff along with numerous visiting scientists and guests.

Specific Comments:

Hazardous Waste Determination

1. When should the hazardous waste determination be made in a laboratory setting?

At ORNL, the hazardous waste determination is made at the point of generation (in the individual lab while the waste is in the SAA and before it is submitted to a 90-day accumulation area). In most cases, the actual determination is made by waste management specialists whose job is to help generators characterize and dispose of their wastes properly. This process works well for ORNL and allows for significant generator input/involvement in the characterization and management process while providing more highly trained technical support to fully document and characterize the waste.

2. What training is needed for lab personnel concerning hazardous waste determinations (e.g., full RCRA training or training that is made specific to chemical management duties)?

The RCRA training for lab personnel (e.g., laboratory generators) should be specific to their duties associated with waste management functions at their site. At ORNL, there may be several researchers who work in a given lab and support a given project, but only a limited number of them may be assigned responsibility for operating the SAA. Each researcher is responsible for providing the characterization information on the hazardous wastes they generate. Since the generators with waste management specialist support (see above) do not actually make the hazardous waste determinations, ORNL has reduced those generator's training requirements to what they need to know to work within the ORNL waste management system. Any generator not utilizing waste management specialist support is required to complete a full complement of RCRA training ranging from waste characterization, SAA operations, and land disposal restrictions.

3. How should waste be labeled so it can be appropriately managed as hazardous waste (e.g., the words "hazardous waste" or a detailed chemical description)?

At ORNL, hazardous wastes in SAAs are labeled primarily with their contents. They may or may not be labeled "hazardous waste." Researchers may use one or more waste containers at a SAA for wet chemistry solutions and maintain records of the unique components used in the research to support the eventual waste determination process. Some labels may be specific, such as "waste acetone solutions," where as others may be generic, "waste solvent solutions" or "waste organics." ORNL advocates leaving the labeling requirement as flexible as possible.

4. Where should the hazardous waste determination be made (e.g., on the bench or in the 90 to 180 day storage area)?

ORNL advocates allowing as much flexibility as possible and allowing waste determinations to be changed or amended in the 90DAA if it is discovered that an earlier hazardous waste determination was made in error.

Satellite Accumulation Area (SAA) Accumulation Time

If more than 55 gallons of hazardous waste or more than 1 quart of acute hazardous waste is accumulated at a SAA, the excess must be removed within three days.

1. How should these requirements be applied in a laboratory context?

The requirement to move the “excess volume” is really an error, is not practical, and is not typically done. It is the full, 55-gal or 1-qt container (or their equivalents in multiple containers) that is, and should be, removed to allow for additional waste generation to continue unimpeded.

2. How often do laboratories accumulate more than 55 gallons of waste in their SAA?

The majority of ORNL laboratories rarely generate/store 55 gallons of waste in a SAA. They routinely generate multiple waste streams in small (less than 5 gal containers). They will occasionally generate a P-listed waste along with other containers of hazardous wastes. The volume of the P-listed waste is generally very small and is considerably less than 1 qt. Separate SAAs are not set up for different hazardous wastes generated in a given laboratory, unless the generation processes and waste streams are unique.

3. What, if any, difficulties do environmental health and safety personnel have responding to waste pick-up calls, e.g., within the three-day time limit?

Due to the small volumes of hazardous wastes held in SAAs at ORNL, the three-day limit is a minor problem, but does strain the waste management process to implement whenever the volume limit is reached. ORNL has adapted and, if necessary, can quickly open a 90DAA at the lab to allow for continued storage at the point of generation. In a few cases, generators have resorted to collecting larger volume waste streams in smaller containers, which triggers the need for more frequent pickups. Our difficulties in meeting the three-day limit, center on the amount of time needed to prepare the internal paperwork to initiate the waste disposal process (including the request for waste disposal with the associated documentation of the waste’s characterization) and to allow time for the (1) review by ORNL waste management specialists and internal waste certification program staff that the characterization is accurate and complete, (2) field verification of the container and its closure, and (3) finally scheduling and completing the waste pickup. ORNL prefers to only place fully characterized and fully documented waste into its main

90DAAs (where the majority of ORNL wastes are eventually collected and shipments are initiated).

4. How would a longer time-frame for removal impact the cost of waste management and the ability to protect human health and the environment?

If EPA would increase the time limit to 7 or 14 days, then there would be reduced operational costs to ORNL as a whole to maintain the level of compliance. It would reduce the need to expedite waste reviews and pickups, open and close “short-term” 90DAAs, or utilize smaller containers for waste accumulation. It would allow for timely review of paperwork and pickup of the waste with less impact to the day-to-day research and waste management functions.

The SAAs provide adequate protection of human health and the environment. Spills are quickly identified and cleaned up. Container condition and closure requirements, combined with waste labeling requirements provide sufficient controls in SAAs.

Treatment in SAAs

1. What types of treatment, other than neutralization, are laboratory personnel currently performing or would like to perform?

SAA operators only conduct limited elementary neutralization (for D002 corrosive wastes only). Other treatment that would be beneficial would be neutralization of wastes with D002 as the primary hazard (other waste codes could be present) or deactivation of ignitable (D001) wastes destined for on-site wastewater treatment. Some generators would like to do small-scale recycling/regeneration of solvents for reuse in their own labs, but have avoided it due to Subpart AA and/or BB implications.

2. What would be the benefits of the desired types of treatment?

Elimination of the corrosivity of waste streams allows for safer storage and less likelihood of spills/releases caused by impaired container condition.

Other Issues

1. Movement/Transfers of SAAs

ORNL requests that EPA address and allow for the movement of SAAs to alternate locations. At ORNL, researchers and their associated waste generation processes frequently move from one laboratory and/or building to another. It is a strain on the waste management resources to pick up the researcher’s wastes held at the initial SAA in a timely fashion and also a strain on the researcher to retain control of the SAA until the time the waste is picked up. ORNL would propose that a researcher should be allowed to move the waste and the SAA to a new location. This allows the researcher to continue to fill partially full containers and not have to dispose of partially full waste containers.

2. Laboratory Cleanouts of Excess/Unwanted Chemicals

ORNL requests that EPA specifically address and allow for waste management specialists (on behalf of the generator/owner of the chemicals) to conduct waste determinations regarding excess/unwanted chemicals generated as part of laboratory cleanouts. It would help if the excess/unwanted chemicals would not be considered waste, even though the original owner has no further need, and that the waste management specialist could serve as the waste generator (or SAA operator) for the waste once the hazardous waste determination has been made. ORNL proposes that waste management specialists be allowed to operate areas designed for the temporary collection of excess/unwanted chemicals. The waste management specialists would then evaluate the chemicals for alternative onsite users/resale to outside users, and then classify the chemical as either waste (solid and/or hazardous) or reuseable product at the collection point. This would facilitate the recycle/reuse of these excess laboratory chemicals and allow for more efficient handling, packaging, and pickup. Large-scale (whole building) cleanouts may necessitate temporary holding of chemicals for up to 30 days to allow for the evaluation process to be completed and to arrange for handling as waste or to transfer to an alternate user.

3. Laboratory Waste Transfer Stations

ORNL requests that EPA allow for short-term aggregation of hazardous wastes near the point of aggregation to facilitate movement to on-site 90DAAs. The concept would be much like a transporter's "transfer station" where wastes are temporarily moved from a building's satellite areas to a loading dock or more centralized location (for up to 10 days) to be staged for transfer to a 90DAA. This would allow for consolidation of like wastes and/or labpacking larger quantities of similar wastes and less frequent moves/transfers of wastes.

4. Project-Oriented Generator Accumulation Areas

Many ORNL researchers utilize more than one laboratory for their research. The laboratory arrangement/setting can be highly variable; their laboratories may be next door to one another, across the hall from one another, or on adjacent hallways (that are connected by a duct chase that allow for personnel access). The waste streams generated by a given researcher (and his/her staff) at his various locations are typically similar and chemically compatible. The existing SAA regulations force ORNL to operate separate SAAs at each point of generation and, as a result, the wastes (although similar or the same) are generally handled as separate (unique) wastes. Allowing researchers more flexibility with placement and operation of SAAs would be beneficial. Allowing them to hold and move small quantities of wastes between their assigned laboratories for combining like waste streams (without triggering 90DAA requirements) would allow for improved waste consolidation by the initial generator and reduce the impacts on the waste management process (less paperwork to initiate and review; fewer waste pickups involving larger volumes of laboratory process wastes).